Amendments to the Claims:

Please amend the claims as follows. This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (currently amended) A method for determining first and second filter coefficients in a noise elimination filter which receives a predicted channel response signal and the first and second filter coefficients where their sum is set to a predetermined value, and removes a noise component from the predicted channel response signal, comprising the steps of:

a) detecting a noise level upon receiving a difference between the predicted channel response signal and a previously predicted channel response signal, and detecting channel speed prediction information upon receiving an auto-correlation function of the predicted channel response signal; and

b) determining first and second filter coefficients mapping-processed by the detected noise level and the detected channel speed prediction information, ~~wherein the first filter coefficient is inverse proportional to the second filter coefficient~~

wherein the higher the first filter coefficient, the lower the second filter coefficient, whereas the lower the first filter coefficient, the higher the second filter coefficient.

2. (original) The method as set forth in claim 1, further comprising the step of:

c) if the detected channel speed prediction information value is lower than a predetermined threshold value, performing a slope compensation of a channel response signal of which the noise component is eliminated by the first and second filter coefficients.

3. (original) The method as set forth in claim 1, wherein the noise level α is calculated by the following equation:

$$\alpha = \frac{1}{M_{pilot}} \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) - \tilde{c}(n-1) \right|$$

where M_{pilot} is the number of pilot symbols for every packet, $\tilde{c}(n)$ is the predicted channel response signal, and $\tilde{c}(n-1)$ is the previously predicted channel response signal.

4. (original) The method as set forth in claim 1, wherein the channel speed prediction information is obtained by the following equations:

$$\beta = \min\left[R_{\tilde{c}}(l) / \max(R_{\tilde{c}}) \right]$$

where β satisfies a predetermined condition of $0 \le \beta \le 1$, and min[x] is a minimum value of 'x'; and

$$R_{\tilde{c}(n)}(l) = \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) \right| \circ \left| \tilde{c}(n+l) \right|$$

where $R_{\tilde{c}(n)}(l)$ is an auto-correlation function using the predicted channel response signal $\tilde{c}(n)$.

5. (original) The method as set forth in claim 1, wherein the channel speed prediction information is obtained by the following equations:

$$\beta = mean[R_{\tilde{c}}(l) / \max(R_{\tilde{c}})]$$

where β satisfies a predetermined condition of $0 \le \beta \le 1$, and mean[x] is a mean value of 'x'; and

$$R_{\tilde{c}(n)}(l) = \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) \right| \circ \left| \tilde{c}(n+l) \right|$$

where $R_{\tilde{c}(n)}(l)$ is an auto-correlation function using the predicted channel response signal $\tilde{c}(n)$.

6. (original) The method as set forth in claim 2, wherein the step (c) for performing the slope compensation includes the steps of:

c1) respectively assigning different channel compensation values $\Lambda(n)$ calculated by the following first equation to a plurality of data symbols corresponding to one pilot symbol; and

c2) adapting the assigned channel compensation values $\Lambda(n)$ to the following second equation, and performing slope compensation operations for every data symbol,

wherein said first equation is represented by:

$$\Lambda(n)=\frac{1}{W \circ (SF_{pilot} / SF_{data})} \sum_{w=0}^{w-1} \left| \hat{c}(n-w)-\hat{c}(n-w-1) \right|$$

where n is an index of a pilot symbol contained in one packet, w is a size of window used for slope prediction, $\hat{c}(n)$ is a signal of which an N-th noise is eliminated, SF_{pilot} is a spreading factor (SF) of a pilot channel, SF_{data} is a spreading factor (SF) of a data channel, and SF_{pilot} / SF_{data} is the number of data symbols corresponding to one pilot symbol,

wherein said second equation is represented by:

$$c_{est}(n,k)=\hat{c}(n) \circ k \circ \Lambda(n) \qquad (1 \leq k \leq SF_{pilot} / SF_{date})$$

where $c_{est}(n,k)$ is a channel-compensated output signal of k-th data symbol with respect to an N-th pilot symbol.

7. (original) The method as set forth in claim 1, wherein the second filter coefficient is equally distributed to N coefficients when the noise elimination filter is an N-th noise elimination filter.

8. (original) The method as set forth in claim 1, wherein the second filter coefficient is unequally distributed to N coefficients due to different weights, when the noise elimination filter is an N-th noise elimination filter.

9. (original) The method as set forth in claim 1, wherein the first and second filter coefficients are determined to be two filter coefficients of one group selected from among a plurality of filter coefficient groups, each group being composed of two filter coefficients, mapping-processed for every area differently assigned according to at least one first reference value for discriminating between noise levels and at least one second reference value for discriminating between channel speed prediction information, said selected one group being selectively determined according to the detected noise level and the detected channel speed prediction information.

10. (currently amended) An apparatus for determining first and second filter coefficients in a noise elimination filter which receives a predicted channel response signal and the first and second filter coefficients where their sum is set to a predetermined value, and removes a noise component from the predicted channel response signal, comprising:

a channel-speed/noise-level detector for detecting a noise level upon receiving a difference between the predicted channel response signal and a previously predicted channel response signal, and detecting channel speed prediction information upon receiving an auto-correlation function of the predicted channel response signal; and

a filter coefficient controller for determining first and second filter coefficients mapping-processed by the detected noise level and the detected channel speed prediction information; ~~wherein the first filter coefficient is inverse proportional to the second filter coefficient~~

<u>wherein the higher the first filter coefficient, the lower the second filter coefficient, whereas the lower the first filter coefficient, the higher the second filter coefficient</u>.

11. (original) The apparatus as set forth in claim 10, wherein the filter coefficient controller, if the detected channel speed prediction information value is lower than a predetermined threshold value, controls a slope compensator to perform a slope compensation of a channel response signal of which a noise component is eliminated by the first and second filter coefficients.

12. (original) The apparatus as set forth in claim 10, wherein the noise level α is calculated by the following equation:

$$\alpha = \frac{1}{M_{pilot}} \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) - \tilde{c}(n-1) \right|$$

where M_{pilot} is the number of pilot symbols for every packet, $\tilde{c}(n)$ is the predicted channel response signal, and $\tilde{c}(n-1)$ is the previously predicted channel response signal.

13. (original) The apparatus as set forth in claim 10, wherein the channel speed prediction information is obtained by the following equations:

$$\beta = \min\left[R_{\tilde{c}}(l) / \max(R_{\tilde{c}}) \right]$$

where β satisfies a predetermined condition of $0 \le \beta \le 1$, and min[x] is a minimum value of 'x'; and

$$R_{\tilde{c}(n)}(l) = \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) \right| \circ \left| \tilde{c}(n+l) \right|$$

where $R_{\tilde{c}(n)}(l)$ is an auto-correlation function using the predicted channel response signal $\tilde{c}(n)$.

14. (original) The apparatus as set forth in claim 10, wherein the channel speed prediction information is obtained by the following equations:

$$\beta = mean[R_{\tilde{c}}(l) / \max(R_{\tilde{c}})]$$

where β satisfies a predetermined condition of $0 \le \beta \le 1$, and mean[x] is a mean value of 'x'; and

$$R_{\tilde{c}(n)}(l) = \sum_{n=1}^{M_{pilot}} \left|\tilde{c}(n)\right| \circ \left|\tilde{c}(n+l)\right|$$

where $R_{\tilde{c}(n)}(l)$ is an auto-correlation function using the predicted channel response signal $\tilde{c}(n)$.

15. (original) The apparatus as set forth in claim 11, wherein the slope compensator respectively assigns different channel compensation values $\Lambda(n)$ calculated by the following first equation to a plurality of data symbols corresponding to one pilot symbol, and adapts the assigned channel compensation values $\Lambda(n)$ to the following second equation, and performing slope compensation operations for every data symbol,

wherein said first equation is represented by:

$$\Lambda(n) = \frac{1}{W \circ (SF_{pilot} / SF_{data})} \sum_{w=0}^{w-1} \left|\hat{c}(n-w) - \hat{c}(n-w-1)\right|$$

where n is an index of a pilot symbol contained in one packet, w is a size of window used for slope prediction, $\hat{c}(n)$ is a signal of which an N-th noise is eliminated, SF_{pilot} is a spreading factor (SF) of a pilot channel, SF_{data} is a spreading factor (SF) of a data channel, and SF_{pilot} / SF_{data} is the number of data symbols corresponding to one pilot symbol,

wherein said second equation is represented by:

$$c_{est}(n,k) = \hat{c}(n) \circ k \circ \Lambda(n) \qquad \left(1 \le k \le SF_{pilot} / SF_{date}\right)$$

where $c_{est}(n,k)$ is a channel-compensated output signal of k-th data symbol with respect to an N-th pilot symbol.

16. (original) The apparatus as set forth in claim 10, wherein the filter coefficient controller equally distributes the second filter coefficient to N coefficients when the noise elimination filter is an N-th noise elimination filter.

17. (original) The apparatus as set forth in claim 10, wherein the filter coefficient controller unequally distributes the second filter coefficient to N coefficients due to different weights, when the noise elimination filter is an N-th noise elimination filter.

18. (original) The apparatus as set forth in claim 10, wherein the filter coefficient controller determines first and second filter coefficients to be two filter coefficients of one group among a plurality of filter coefficient groups, each group being composed of two filter coefficients, mapping-processed for every area differently assigned according to at least one first reference value for discriminating between noise levels and at least one second reference value for discriminating between channel speed prediction information, said selected one group being selectively determined according to the detected noise level and the detected channel speed prediction information.

19. (currently amended) A method for receiving a common pilot channel signal at an adaptive channel estimator of a mobile communication system, and removing a noise from the received common pilot channel signal, comprising the steps of:

a) multiplying a complex conjugate of a corresponding pilot symbol by the common pilot channel signal, and outputting a predicted fading channel response signal;

b) detecting a noise level contained in the predicted fading channel response signal;

c) detecting a channel speed of the common pilot channel signal on the basis of the predicted fading channel response;

d) comparing the detected noise level with at least one first reference value;

e) comparing the detected channel speed with at least one second reference value;

f) determining first and second filter coefficients which are mapped to an area corresponding to the comparing result <u>among first and second filter coefficients being mapping-processed for every area assigned by the first and second reference values</u> to be filter coefficients for noise elimination~~, said first and second filter coefficients being mapping processed for every area assigned by the first and second reference values~~; and

g) removing a noise component from the predicted fading channel response signal using the determined first filter coefficient and the determined second coefficient;

wherein the higher the first filter coefficient, the lower the second filter coefficient, whereas the lower the first filter coefficient, the higher the second filter coefficient~~wherein the first filter coefficient is inverse proportional to the second filter coefficient~~.

20. (original) The method as set forth in claim 19, further comprising the step of:

h) if the detected channel speed prediction information value is lower than a predetermined threshold value, performing a slope compensation of a channel response signal of which a noise component is eliminated by the first and second filter coefficients.

21. (original) The method as set forth in claim 19, wherein the noise level α is calculated by the following equation:

$$\alpha = \frac{1}{M_{pilot}} \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) - \tilde{c}(n-1) \right|$$

where M_{pilot} is the number of pilot symbols for every packet, $\tilde{c}(n)$ is the predicted channel response signal, and $\tilde{c}(n-1)$ is the previously predicted channel response signal.

22. (original) The method as set forth in claim 19, wherein the channel speed prediction information is obtained by the following equations:

$$\beta = \min\left[R_{\tilde{c}}(l) / \max(R_{\tilde{c}}) \right]$$

where β satisfies a predetermined condition of $0 \le \beta \le 1$, and min[x] is a minimum value of 'x'; and

$$R_{\tilde{c}(n)}(l) = \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) \right| \circ \left| \tilde{c}(n+l) \right|$$

where $R_{\tilde{c}(n)}(l)$ is an auto-correlation function using the predicted channel response signal $\tilde{c}(n)$.

23. (original) The method as set forth in claim 19, wherein the channel speed prediction information is obtained by the following equations:

$$\beta = mean[R_{\tilde{c}}(l) / \max(R_{\tilde{c}})]$$

where β satisfies a predetermined condition of $0 \leq \beta \leq 1$, and mean[x] is a mean value of 'x'; and

$$R_{\tilde{c}(n)}(l) = \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) \right| \circ \left| \tilde{c}(n+l) \right|$$

where $R_{\tilde{c}(n)}(l)$ is an auto-correlation function using the predicted channel response signal $\tilde{c}(n)$.

24. (original) The method as set forth in claim 20, wherein the step (h) for performing the slope compensation includes the steps of:

h1) respectively assigning different channel compensation values $\Lambda(n)$ calculated by the following first equation to a plurality of data symbols corresponding to one pilot symbol; and

h2) adapting the assigned channel compensation values $\Lambda(n)$ to the following second equation, and performing slope compensation operations for every data symbol,

wherein said first equation is represented by:

$$\Lambda(n) = \frac{1}{W \circ (SF_{pilot} / SF_{data})} \sum_{w=0}^{w-1} \left| \hat{c}(n-w) - \hat{c}(n-w-1) \right|$$

where n is an index of a pilot symbol contained in one packet, w is a size of window used for slope prediction, $\hat{c}(n)$ is a signal of which an N-th noise is eliminated, SF_{pilot} is a spreading factor (SF) of a pilot channel, SF_{data} is a spreading factor (SF) of a data channel, and SF_{pilot}/SF_{data} is the number of data symbols corresponding to one pilot symbol,

wherein said second equation is represented by:

$$c_{est}(n,k)=\hat{c}(n)\circ k\circ\Lambda(n) \qquad \left(1\leq k\leq SF_{pilot}/SF_{date}\right)$$

where $c_{est}(n,k)$ is a channel-compensated output signal of k-th data symbol with respect to an N-th pilot symbol.

25. (original) The method as set forth in claim 19, wherein the second filter coefficient is equally distributed to N coefficients when the noise elimination filter is an N-th noise elimination filter.

26. (original) The method as set forth in claim 19, wherein the second filter coefficient is unequally distributed to N coefficients due to different weights, when the noise elimination filter is an N-th noise elimination filter.

27. (currently amended) An apparatus for receiving a common pilot channel signal at an adaptive channel estimator of a mobile communication system, and removing a noise from the received common pilot channel signal, comprising:

a multiplier and an integration/dump filter for multiplying a complex conjugate of a corresponding pilot symbol by the common pilot channel signal, and outputting a predicted fading channel response signal;

a channel-speed / noise-level detector for detecting a noise level contained in the predicted fading channel response signal, and detecting a channel speed of the common pilot channel signal;

a filter coefficient controller for setting first and second filter coefficients mapped with an area corresponding to the comparing result among first and second filter coefficients being mapping-processed for every area assigned by the first and second reference values to noise

elimination filter coefficients~~, said first and second filter coefficients being mapping processed for every area assigned by the first and second reference values~~; and

a noise elimination filter for removing a noise component from the predicted fading channel response signal using the determined first filter coefficient and the determined second coefficient;

<u>wherein the higher the first filter coefficient, the lower the second filter coefficient, whereas the lower the first filter coefficient, the higher the second filter coefficient</u>~~wherein the first filter coefficient is inverse proportional to the second filter coefficient~~.

28. (original) The apparatus as set forth in claim 27, wherein the filter coefficient controller, if the detected channel speed prediction information value is lower than a predetermined threshold value, controls a slope compensator to perform a slope compensation of a channel response signal of which a noise component is eliminated by the first and second filter coefficients.

29. (original) The apparatus as set forth in claim 27, wherein the noise level α is calculated by the following equation:

$$\alpha = \frac{1}{M_{pilot}} \sum_{n=1}^{M_{pilot}} \left| \tilde{c}(n) - \tilde{c}(n-1) \right|$$

where M_{pilot} is the number of pilot symbols for every packet, $\tilde{c}(n)$ is the predicted channel response signal, and $\tilde{c}(n-1)$ is the previously predicted channel response signal.

30. (original) The apparatus as set forth in claim 27, wherein the channel speed prediction information is obtained by the following equations:

$$\beta = \min\left[R_{\tilde{c}}(l) / \max(R_{\tilde{c}}) \right]$$

where β satisfies a predetermined condition of $0 \leq \beta \leq 1$, and min[x] is a minimum value of 'x'; and

$$R_{\tilde{c}(n)}(l) = \sum_{n=1}^{M_{pilot}} \left|\tilde{c}(n)\right| \circ \left|\tilde{c}(n+l)\right|$$

where $R_{\tilde{c}(n)}(l)$ is an auto-correlation function using the predicted channel response signal $\tilde{c}(n)$.

31. (original) The apparatus as set forth in claim 27, wherein the channel speed prediction information is obtained by the following equations:

$$\beta = mean[R_{\tilde{c}}(l) / \max(R_{\tilde{c}})]$$

where β satisfies a predetermined condition of $0 \leq \beta \leq 1$, and mean[x] is a mean value of 'x'; and

$$R_{\tilde{c}(n)}(l) = \sum_{n=1}^{M_{pilot}} \left|\tilde{c}(n)\right| \circ \left|\tilde{c}(n+l)\right|$$

where $R_{\tilde{c}(n)}(l)$ is an auto-correlation function using the predicted channel response signal $\tilde{c}(n)$.

32. (original) The apparatus as set forth in claim 28, wherein the slope compensator respectively assigns different channel compensation values $\Lambda(n)$ calculated by the following first equation to a plurality of data symbols corresponding to one pilot symbol, and adapts the assigned channel compensation values $\Lambda(n)$ to the following second equation, and performing slope compensation operations for every data symbol,

wherein said first equation is represented by:

$$\Lambda(n)=\frac{1}{W \circ (SF_{pilot} / SF_{data})}\sum_{w=0}^{w-1}\left|\hat{c}(n-w)-\hat{c}(n-w-1)\right|$$

where n is an index of a pilot symbol contained in one packet, w is a size of window used for slope prediction, $\hat{c}(n)$ is a signal of which an N-th noise is eliminated, SF_{pilot} is a spreading factor (SF) of a pilot channel, SF_{data} is a spreading factor (SF) of a data channel, and SF_{pilot} / SF_{data} is the number of data symbols corresponding to one pilot symbol,

wherein said second equation is represented by:

$$c_{est}(n,k)=\hat{c}(n) \circ k \circ \Lambda(n) \qquad (1 \le k \le SF_{pilot} / SF_{date})$$

where $c_{est}(n,k)$ is a channel-compensated output signal of k-th data symbol with respect to an N-th pilot symbol.

33. (original) The apparatus as set forth in claim 27, wherein the filter coefficient controller equally distributes the second filter coefficient to N coefficients when the noise elimination filter is an N-th noise elimination filter.

34. (original) The apparatus as set forth in claim 27, wherein the filter coefficient controller unequally distributes the second filter coefficient to N coefficients due to different weights, when the noise elimination filter is an N-th noise elimination filter.

35. (original) The apparatus as set forth in claim 27, wherein the filter coefficient controller determines first and second filter coefficients to be two filter coefficients of one group among a plurality of filter coefficient groups, each group being composed of two filter coefficients, mapping-processed for every area differently assigned according to at least one first reference value for discriminating between noise levels and at least one second reference value for discriminating between channel speed prediction information, said selected one group being selectively determined according to the detected noise level and the detected channel speed prediction information.